

# **Electronic Lottery Ticket Data Structure, And Method of Generation, Storage, and Distribution of Electronic Lottery Tickets**

## **Cross-Reference to Related Applications:**

[0001] This application claims priority of U.S. Provisional Patent Application serial No. 60/418,369, filed on October 16, 2002 and entitled "Method of Generating and Distributing a Population of Lottery Tickets" and of U.S. Provisional Patent Application No. 60/494,571, filed on August 13, 2003 entitled "Electronic Lottery Ticket Data Structure, and Method of Generation, Storage, and Distribution of Electronic Lottery Tickets". The entire content of said provisional applications is incorporated herein by reference.

## **Field of the Invention:**

[0002] The invention relates to a method and system to generate, store and distribute electronic lottery tickets. The invention particularly relates to a new data structure for these electronic lottery tickets.

## **Background of the Invention:**

[0003] Gaming industry in the United States is divided in three game categories: class I, II and III. Class I consists in entertainment only games; class II is mostly composed of bingo and lottery games; and class III includes all wagering games not included in above classes. The present invention particularly pertains to the class II games, and more precisely to lottery games.

[0004] Lottery games are well known in the gaming industry. Most popular formats for lottery game include paper-based tickets, said tickets being either scratch-off tickets, pull-tab tickets, or tickets bearing lottery numbers. Even today, most popular lottery games are played on a paper-based format.

[0005] Scratch-off format tickets consist in a paper ticket on which game information is concealed via an opaque substrate. Players remove the substrate to reveal the ticket information, consequently the ticket value. Pull-tab format tickets consist in folded or multi-layer tickets wherein ticket information cannot be revealed without pulling apart the ticket to reveal valuable information. Tickets bearing lottery numbers are either pre-printed or printed upon request, with the ticket values determined via comparison of their lottery numbers to a draw. This last type of lottery ticket offers a non-instant game, while the two others provide an instant one allowing the players to know instantly the ticket value after buying them.

[0006] With regard to instant-game lottery tickets, most of them bear information corresponding to the play of a multi-component game. For instance, a scratch-off lottery ticket may bear the information corresponding to a bingo and a lotto game. However, even if each ticket bears multi-game-like information, it is in fact two game representations involved in the play of a single ticket. Furthermore, all lottery tickets of the game contain the same quantity and type of information; in this case, the two same game representations with representation values summed up providing the ticket value.

[0007] Lottery tickets of another kind are electronically distributed lottery tickets (also known as electronic lottery tickets). Electronic lottery tickets are generated by a ticket generation program, stored on a ticket storage medium, inserted in a ticket distribution system, and distributed by said ticket distribution system to players on player terminals upon request. In an electronic format, an instant lottery game is provided with all requisite information for the play of a single electronic lottery ticket

contained in each packet of information sent by the ticket distribution system to a player terminal. In consequence, the volume of information is constant from one ticket to another, like paper-based tickets.

[0008] U.S. patent no. 6,524,184 provides an alternative electronic ticket format for the play of an interactive lottery game. Lind et al. describe an interactive lottery game using a first-level population of electronic tickets and a plurality of second-level populations of electronic tickets, wherein correlation rules between the first- and second-level populations determines the level of interaction offered to the player. Accordingly, the invention of Lind et al. allows the play of an interactive lottery game similar to draw poker using a multi-population electronic-lottery-ticket format.

**Objects of the Invention:**

[0009] Accordingly, an object of the invention is to provide a new electronic lottery ticket data structure allowing variation in the ticket information in order to provide variations of the game characteristics, additional incentives, etc. These variations of game characteristics and additional incentives can be additional graphic, additional animations, additional sounds, special event features, additional subsequent-ticket-play representations, etc.

[0010] Another object of the invention is to provide a new data structure for electronic lottery tickets wherein additional incentives can be added for the play of said tickets. Furthermore, said data structure should allow, within a single game, to provide tickets with incentives of different formats, either basic ticket-play representations, additional graphics, additional animations, additional sounds, special event features, additional subsequent-ticket-play representations, etc. Finally, the ticket structure should contain only pertinent ticket information in order to

allow optimized communication of said tickets between the different systems pertaining to the play of such electronic lottery tickets.

[0011] Another object is to provide an optimized electronic-lottery-ticket data structure wherein only information pertaining to the play and representation of the requested electronic lottery ticket is transmitted by the ticket distribution system to the requesting player terminal. Accordingly, the use of said data structure decreases the quantity of information transmitted between the participating system-components and therefore lightens communications.

[0012] Another object is to provide a method of generating electronic lottery tickets based on said data structure. In consequence, electronic lottery tickets may contain information with regard to different incentives, may have different information volume from one another, etc and still be part of the same game.

[0013] Another object is to provide a system and method of distribution of said electronic lottery tickets. The system includes a ticket generation module, a ticket storage medium, a ticket distribution module, a communication module and at least one player terminal. The method in association to this system allows management and communication of the tickets in its most effective way in order to provide a secure, player-entertaining and communication-efficient electronic lottery game.

[0014] Finally, another object is to provide a method of playing and/or providing game representation of an electronic lottery ticket using said data structure. The player terminal on which a ticket representation is provided may be able to decode ticket information and modify game representation based on ticket information.

#### **Summary of the Invention:**

[0015] In one of its embodiments, the present invention relates to a new electronic-lottery-ticket data structure wherein the volume and characteristic of the information contained in one electronic lottery ticket may vary from one ticket to another. According to said structure, each electronic lottery ticket contains base information (primary play-representation data), as well as optional additional pertinent information (such as primary-play representation-modification data, additional-play representation data, etc). Therefore, representation of an electronic lottery ticket of this kind on a player terminal may involve a single- or a multi-step ticket representation in response to a single ticket request of the requesting player terminal to the ticket distribution module.

[0016] The primary-play representation of an electronic lottery ticket and its subsequent play representations may keep the same display structure or may use different display structures. For instance, with an electronic lottery ticket containing additional-play representation data, a player terminal may provide a primary-play representation of the ticket in an 8-line format, and a number of subsequent additional-play representations of the ticket may be provided in a 1-line game format. In this example, the use of a different display structure for the subsequent additional-play representations proposes an additional incentive to players.

[0017] Furthermore, the invention discloses a system and method for the generation and storage of electronic lottery tickets using the instant data structure thereon. In consequence, a population of electronic lottery tickets corresponding to one game may be generated and stored on a permanent storage medium. This medium may be used afterward in a distribution module for the play of said game.

[0018] Finally, the invention also discloses a system and method for the distribution of these electronic lottery tickets in order to provide a seamless play environment. This gaming environment consists in a distribution module that is in communication with a plurality of player terminals. At their player terminals, the

players are offered the electronic lottery game. A particular characteristic of this game resides in changes in game representation from one ticket to another.

**Brief Description of the Drawings:**

[0019] These and other aspects and advantages of the present invention will become better understood in light of the following detailed description of preferred embodiments with reference to the accompanying drawings, in which:

[0020] Figure 1 is a schematic representation of an example of an 8-line game format as used in a preferred embodiment of the invention;

[0021] Figure 2 is a game overview according to an example of a preferred embodiment of the invention;

[0022] Figure 3 is a schematic representation of the variable-size data structure in accordance with an embodiment of the invention;

[0023] Figure 4 is a flow chart illustrating ticket generation process in accordance with an embodiment of the invention;

[0024] Figure 5A is a first part of a flow chart illustrating game representation at a player terminal in accordance with an embodiment of the invention;

[0025] Figure 5B is a second part of a flow chart illustrating game representation at a player terminal in accordance with an embodiment of the invention; and

[0026] Figure 6 is a block diagram illustrating an arrangement comprising a player terminal and a distribution module in accordance with an embodiment of the invention.

#### **Detailed Description of the Invention:**

[0027] To disclose a method of using the electronic-lottery-ticket data structure, the current example uses an 8-line game format, as shown in Figure 1. The eight lines are identified by the eight arrows in Figure 1. In order to play the game, the player places a bet (also called a purchase fee when it is a ticket game) with the outcome value being based on said bet. With ticket games, the player usually has no control over the ticket fee required; it is fixed for the game. This game format lays in a representation of a matrix of three (3) rows by three (3) columns. A symbol (generally called game indicia)  $S_i$  is displayed in all areas defined by the intersection of a column and a row. Accordingly, the total number of symbols composing an outcome of this game is nine (9). The outcome is evaluated based on different criteria, such as the symbol combination defined by a pay line (which may be a vertical, a horizontal or a diagonal line) or a combination of symbols in a predetermined non-linear configuration.

[0028] An overview of the disclosed game is shown in Figure 2. As disclosed, a number of different prize categories and outcome criteria are available within this game: line wins **10**, scattered wins **12** based on a number of a particular symbol occurrence, a jackpot win **14** based on a "cover all" of any identical symbol, multi-symbol wins **16**, and free-ticket wins **18** triggered by a ticket outcome fulfilling the free-ticket criterion. The free-ticket criterion requires the presence of four (4) times the same symbol on the game matrix in a particular configuration: a symbol representation on each one of the four corner areas of the matrix. Upon occurrence of a ticket outcome fulfilling the free-ticket criterion, the player is awarded up to eight

(8) free tickets of the game in the same display structure or in a different display structure. As a result, the purchase of a single ticket provides the player up to nine (9) ticket outcomes.

[0029] A ticket-generating program generates the electronic lottery tickets. The ticket-generating program uses a pay schedule divided in two parts: a primary-play pay schedule and a free-play pay schedule. The two pay schedules give all the necessary information to generate all electronic lottery tickets of the game: the game format in which the ticket outcome is displayed, the number of winning tickets provided to the player upon purchase of a single ticket, the ticket values, the ticket representation requirements, the population size of electronic lottery tickets, etc. Based on the two pay schedules, the ticket-generating program builds a population of electronic lottery tickets. Each ticket information includes all the required information for their play: the ticket value, the list of the prizes won on the ticket, the symbols participating into the ticket outcome, ticket outcome representation information, and information related to free-plays. Consequently, each single electronic lottery ticket contains all information for ticket representation on a player terminal, including primary-play representation and subsequent-play representation information related to the purchased electronic lottery ticket.

[0030] During the process of ticket generation, electronic lottery tickets are generated one at a time and stored as a game population on a ticket storage medium. The ticket storage medium is afterward inserted into ticket distribution module for its play. The quantity, therefore the size, of the ticket information stored varies from one ticket to another. Based on a ticket whether or not including free-ticket information, the quantity of information of a ticket may be limited to the information related to primary-play representation or additionally to subsequent-play representations.



[0031] Figure 3 provides a schematic representation of the data structure used for the generation, storage and communication of electronic lottery ticket information. The data structure organizes ticket information to include: a) a unique ticket identifier **20**; b) an outcome format identifier **22**, (which in this case identifies a 8-line game format); c) identification of the symbols **24a-i** composing the primary-play representation of the ticket (therefore the outcome) in a predetermined order; d) the number of winning criterion met **26** by the primary-play; and a list of each winning criteria met, including for each of them: e-1) the criterion identification **28**, e-2) the criterion winning type **30**, e-3) the criterion win value **32**, and e-4) the number of times this criterion is fulfilled by the outcome **34** since some criteria may be fulfilled more than once by a single outcome. Once all of the winning criteria that are fulfilled by the outcome are listed, additional information contained in the data structure consists in: f) identification of the number of subsequent free-plays **36** triggered by the primary-play representation. In case of no free-play being triggered by the primary-play representation, the information contained in the data structure stops there. However, in case of a positive number of subsequent free-plays, the information continues with additional information for each free-ticket characterized in: g) free-play outcome-format identifier **38**; h) identification of the free-play symbols **40a-i** in a predetermined order; i) number of free-play winning criteria fulfilled **42**, and a list of each of free-play winning criteria fulfilled, including for each one of them: j-1) criterion identification **44**, j-2) criterion winning type **46**, j-3) criterion win value **48**, and j-4) the number of times the criterion is fulfilled by the outcome **50**.

[0032] The result of the above-described data structure is an electronic lottery ticket using a variable quantity of information. This data structure provides a more flexible game wherein a plurality of game criteria; game representations; game features and free-play tickets are available.

[0033] Figure 4 schematically illustrates via a flow chart the process of the ticket generation program generating electronic-lottery-ticket information. First, a random

selection **60** and generation **62** of information composing a primary ticket is completed based on a copy of the primary-pay schedule. A record corresponding to the generated primary ticket is retrieved **64** from the copy of the primary pay schedule. Information corresponding to the generated primary ticket is placed **66** in a temporary ticket data structure. Primary-ticket information is evaluated **68** based on free-play criterion. In case of a positive free-play evaluation, the number of free plays to associate to the primary-play is determined **70**, and this value is stored in queue in the data structure. Then, each subsequent free-play to associate to the primary play is selected **72** and generated **74** based on a copy of the free-play pay schedule thereby modifying it **76**, and the generated information is placed **78** in queue in the temporary ticket data. In the case of a negative free-play criterion evaluation, or when all free-plays have been generated and are placed **80** in queue in the temporary ticket data, the temporary ticket data is stored **82** as a game ticket on a ticket storage medium or a temporary ticket storage medium. The process continues until all primary plays are generated and stored **84**, the same goes for the free plays. Then, the information is transferred on a mobile ticket storage medium that can be inserted into the ticket distribution module (if necessary).

[0034] Figure **5A** and **5B** schematically illustrates the process related to the play of electronic lottery tickets on a player terminal. First, the player pays **90** a ticket fee to play the game and actuates **92** the game. As a result, the player terminal requests **94** an electronic lottery ticket of the game from the game distribution module. The game distribution module therefore sends **96** a ticket to the player terminal. The player terminal reads **98** the electronic-lottery-ticket information in its received order; consequently, the player terminal reads at least the game format to use for the play representation and the participating symbols; retrieves corresponding information (graphic and sound data for instance) from a permanent memory of the player terminal; and generates **100** a play representation to display on the player-terminal screen. Additional representation features such as highlighting of winning symbol combinations, special sounds, animations, etc are also provided based on read

ticket information. The prizes won are then paid **102**. When reading, at step **104**, electronic-lottery-ticket information, if the information includes free-play information, a *FREE TICKETS* message is displayed **106** (Figure **5B**) on the player-terminal screen and the player terminal provides a play representation (**108**, **110** and **112**) of all subsequent free-plays one at a time, including prize evaluation and awarding, until all the free-plays are finally played **114**. During representation of these free plays, no communication is required between the player terminal and the ticket distribution module; the player terminal already has the necessary information for all these play representations within the original electronic-lottery-ticket information. When all representations of the electronic lottery ticket are provided on the player terminal screen, the player may purchase a new electronic lottery ticket of the game, which would cause the player terminal to send a new ticket request to the ticket distribution module.

[0035] While the invention has been disclosed based as an 8-line game using free plays as variable play representation information, the game may vary in format, in representation, or in characteristics from one electronic lottery ticket to another. For instance, free play information may elect a game format and representation differing from the principal play representation format; it may elect a different set of symbols, different criteria, different prizes, different fees, etc.

[0036] Moreover, variable primary play information may be used to modify the process of providing a representation of the primary play. For instance, the variable information may elect the play of a special animation and/or sound during the representation of the electronic lottery ticket.

[0037] Now referring to Figure **6**, the details of an arrangement comprising a player terminal **120** and a distribution module **130** are shown. Each player terminal **120** is composed of credit-related means **122**, for the insertion, handling, monitoring and redemption of players' credits; player controls **123**, which allow the player to

input game-related information such as game level, game title selection, redemption request, etc; a screen **124** that provides a graphic interface for player selections and graphical representation of the game; gaming computing means **121** completing game-related tasks and controls, such as card evaluation and game representation generation; and gaming communication means **126** communicating in communication with distribution module **130**.

[0038] In an embodiment where the data structure is distributed on electronic player terminals for playing a game, each player terminal **120** may include a counter (win counter **126**) in which the win values are accumulated during the play of a single data structure. When a representation of the whole data structure is provided to the player, the amount accumulated in the win counter **126** is transferred into the player's account.

[0039] In another embodiment, the player terminal **120** may include a format identification means **125** identifying the outcome format of a primary ticket and of one or more subsequent tickets. This identification is based on the electronic lottery ticket information and causes the player terminal **120** to modify at least one of the primary ticket format and the subsequent ticket outcome format.

[0040] Accordingly, while the invention has been described in connection with the specific embodiment thereof, it will be understood that it is capable of further modifications. It is the intend to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice within the art to which the invention pertains. These applications will find their essential features herein set forth in the scope of the appended claims.